

GENERAL MEETING OF BRITISH
ARCHÆOLOGICAL ASSOCIATION.

The general meeting of members was held on Wednesday evening last in the theatre of the Western Literary Institution. Mr. Pettigrew, the treasurer, on taking the chair, said he was authorized by their noble president, Lord Albert Conyngham, to convey to the meeting expressions of regret, that ill-health again prevented him from attending the meeting, and to assure them that his lordship continued to feel the deepest interest in the welfare of the association.

The balance-sheet, verified in more than usually strong terms by Dr. Copeland and the Rev. J. Ellis, auditors, shewed that the receipts from the foundation of the association, in 1843, amounted to £397. 7s. and the expenditure to 724l. 12s. 10½d., shewing a balance in favour of the society of 114l. 14s. 1½d.

The chairman said, considering the cost of printing and illustrating works, and that the expenditure just stated, included the expense of the journal, it must be a matter of surprise that so much had been done with little money. This could not have been effected but for the general good feeling of the contributors, and he must say, that they were especially indebted to their artist, Mr. Fairholt.

Warm votes of thanks were passed to the president, the treasurer, the honorary secretaries (Mr. Croker and Mr. Roach Smith), Mr. Fairholt, Mr. Wright, and the contributors to the journal; Mr. Isaacson, Mr. Britton, Mr. Arden, Mr. Jerdan, Mr. Menzies, Mr. Lott, Mr. Rosser, in addition to the gentlemen named, taking part in the proceedings. Officers for the ensuing year were balloted for, and a code of laws submitted.

INSTITUTION OF CIVIL ENGINEERS.

VIADUCTS—RAILS AND SLEEPERS—INCrustation
OF BOILERS.

Feb. 24th, 1846.—Sir John Rennie, president, in the chair. The first paper read was a "Description of the Dinting Vale Viaduct, on the line of the Sheffield and Manchester Railway," by A. S. Jee, member. This viaduct consists of sixteen arches, five of which are of timber, and eleven of brick. The whole of the large piers, wings, outside spandrils and parapets are built of stone from the quarries in the neighbourhood. The five large arches, which are each of 125 feet span, and 25 feet verred sine, are built of Memel timber; the main ribs of these arches are composed of planking three inches thick, bent and laid longitudinally, and fastened together with oak trenails, and firmly stayed by means of wrought-iron tie rods. The smaller semi-circular arches, situated at each end of the viaduct, are built of brick, with stone quoins. They are of 50 feet in the span, and three feet in thickness, and are built in a curve of forty chains radius, the piers being wedge-shaped, to suit the curve, leaving the faces parallel with each other. The entire cost of the viaduct (which was given in its various details in the paper) was stated to be 35,250l. 6s. 3d., its total length 484 yards, and its greatest height about 125 feet above the water-course. It was commenced early in 1843, and was opened on the 8th of August, 1844. The average cost of construction was calculated to be about 24. 14s. per superficial yard, and 6s. 9d. per cubic yard, the viaduct being eight yards wide.

The paper by Mr. G. W. Hemans, member, described the system invented by Sir John MacNeill, and employed on the Dublin and Drogheda Railway for preparing the transverse sleepers, and fastening the rails upon them. The sleepers are half baulks, 12 inches by 6 inches at the junction of the rails, and immediately, half trees of larch, with the bark on, not less than 8 inches by 4 inches, are placed with the round side upwards, at an average distance of 2 feet 6 inches apart. These sleepers are prepared for bearing the rails by fixing twelve at a time on a sliding table similar to that of a planing machine; they are moved forward by steam power beneath two circular cutters, set at the given distance of the gauge apart, and revolving very rapidly, and which pass through the whole series of sleepers, cutting at a given inclination the seats for the rails. A slight stoppage of the table takes place as each sleeper is cut, in order

to afford time for four drills to descend simultaneously, and to pierce the holes for the pins or trenails for holding down the rails. An engine of six-horse power suffices for working two of these machines, by which one thousand sleepers can be finished complete in twenty-four hours, at an expense of about one penny each, instead of twopence-halfpenny each, which they formerly cost by manual labour. The sleepers, thus prepared, are used transversely beneath rails of the bridge, from which the sides are slightly pinched inwards in finishing, so as to form a dovetail, with a joint plate with a raised rib, which is laid at each junction, and which, by using a screw-pin and plate at one end, and a collar-headed pin at the other, holds the rail very fast, preventing lateral and vertical motion, but permitting longitudinal action in expansion and contraction. These rails weigh eighty-three pounds per yard. The total cost per mile of the double line, including rails, sleepers, pins, spikes, joint chairs, &c., laid complete, is stated at 3,470l. 2s. 8d., when the rails cost 7l. 5s. per ton.

The paper by Mr. W. Vanderkiet, Assoc. described a very useful arrangement of machinery for working the diving bell used in setting the masonry, at a depth of about 8 feet, below the level of extraordinary spring tides, in the extension of the pier at Kilrush in the river Shannon, under the direction of Mr. T. Rhodes, the chief engineer of the Shannon commissioners. Upon a series of piles and longitudinal timbers a railway was laid, upon which two travelling platforms were constructed, with winches, &c. One of them brought the stone nearly over its intended position and lowered it into the sea; the other then brought the diving bell over it, and by means of a chain and purchase the stone was lifted and placed properly in its place by the men in the bell. This work was continued through all the seasons, and with the utmost regularity, and the work so constructed was as solid as if built on dry land. The drawings accompanying the paper gave all the details of the machinery.

March 3.—Sir John Rennie, president, in the chair. The discussion upon the incrustation of boilers was renewed, and it was attempted to be shewn, that, viewed chemically, the muriate of ammonia might act prejudicially upon the copper and iron of boilers; that the two metals, in combination with a saline solution, would induce a powerful galvanic effect, and, if aided by the unequal action of heat on the different parts of the boiler, producing a thermo-galvanic circuit, considerable deterioration of the boiler would ensue. It was instanced, that on applying a small quantity of the muriate of ammonia in a locomotive boiler, the incrustation was immediately removed from the tubes; hence it was argued, that a chemical action upon the metal must have taken place. On the other hand, after contesting the correctness of the chemical view assumed, it was asserted, that from the small quantity of muriate of ammonia used, no perceptible chemical action could ensue, and that in practice, after several severe trials of long duration in locomotive and marine boilers, when the water was subjected to the most delicate tests, no traces of metal could be discovered. It appeared that the action of the muriate of ammonia upon the carbonate of lime forming the incrustation, was merely to disintegrate it, and render it soft and easy to be removed, for that after a given weight of incrustation had been boiled in a solution of muriate of ammonia for several hours, although it was rendered soft and pulverulent, the same weight still remained; thus proving that no sensible chemical combination had taken place. Numerous practical instances were given of the full success of Dr. Ritterbandt's invention, and the general opinion appeared to be, that by the introduction of the system he had conferred a great benefit upon the engineering world, and most particularly upon railways, where the incrustation of the tubes of the locomotives was a source not only of great expense, but not unfrequently the cause of accidents, as by reducing the production of steam, the power was diminished, the speed could not be maintained, and collisions ensued. This process of keeping the boilers free from incrustation was therefore of great importance.

On the subject of the permanent way of the Dublin and Drogheda Railway, it was argued, that although, if taken at weight for weight,

there could be no doubt of the superior strength of the double T shaped rail over the bridge shaped rail, yet that in practice the travelling on the Dublin and Drogheda Railway was remarkably smooth and equable, which it was contended resulted from the firmness of the attachment of the bridge rail direct upon the sleepers, and from the general perfection of the laying of the line of rails.

On the other hand, it was shewn that a lighter double T shaped rail with good cast-iron chairs and wooden trenails for fastenings, and fixed upon triangular sleepers as on the South-Eastern Railway, would, if the same machinery had been used in the preparation, and the same amount of attention had been given to the laying down, hence produced a better line. It was admitted, that the great points in establishing a railway were to have heavier rails and stronger chairs, laid with great accuracy and constantly attended to; but that even then, unless the carriages were well constructed and adapted for their loads, no smoothness or uniformity could be insured.

The discussions were extended to such a length as to preclude the reading of any papers.

After the meeting, Dr. Paltrinieri exhibited to the members in the library, his ingenious instruments for illustrating a system for obtaining the maximum of effect of all motive powers, by using the power of reaction as well as that of action.

At the monthly ballot, the following candidates were elected:—Mr. Alfred Giles, as a member; Messrs. F. Pollock, W. Harding, C. B. Sibley, J. Van Norden Bazalgette, T. R. Crampson, John Gastineau, and Allen Ransome, as associates.

FALL OF A HOUSE, WITH FATAL
RESULT.

A LAMENTABLE occurrence took place at Chelmsford last week, when two persons met their deaths under the following circumstances:—Mr. Grave, his wife, and son, slept in one bed, in a room upon the ceiling of which lay a vast quantity of mortar, rubbish, and tiles, the latter having been two days previously stripped from the roof, in order to raise it and give height for another floor. The work was contracted for by Messrs. Sorrell, but Mr. Grave, anxious that it should be expedited as much as possible, desired that the tiles should remain packed upon the ceiling joists, to be convenient for replacing upon the heightened roof. A weight, it is estimated of nearly three tons, was, in consequence, placed upon the beam and joists, and about 3 A.M. on Monday, the whole fell in with a tremendous crash upon the bed in which the three persons above named were sleeping. There appears to be but little doubt, that Mr. Grave and his son met with instant death; Mrs. Grave escaped unhurt owing to one of the beams having fallen in such a manner as to entirely protect her from the superincumbent materials. At the inquest, the coroner in addressing the jury, took occasion to say, that the question they had to decide was, whether the deaths were the result of accident, or arose from a want of care and caution on the part of the builder. Every man in his calling was bound to use due care—if death was caused through his neglect, he was held criminally responsible; and he (the coroner) did not hesitate to say, that if Mr. Sorrell, being employed on this job, had had the tiles laid there without the order and direction of Mr. Grave, it would have been his duty to tell them that he was criminally responsible for the deaths, and not only him, but Guiver, who placed them there. After some consultation, the jury returned a verdict of "Accidental Death," adding—"And the jury regret that the builder did not, by personal inspection, satisfy himself as to the strength of the floor to carry the superincumbent weight."

INSTITUTE OF THE FINE ARTS.—A general meeting of this body was held on Saturday evening last, in the great room of the Society of Arts, Adelphi. Mr. G. Foggo in the chair. A communication from Mr. Wornum was read, on the art of portrait painting in ancient Greece and Rome. Another paper was read, relative to the fine arts, and the royal patronage extended to them in Bavaria.